

## VI. Collaborators and Responsibilities

The EDM collaboration has been assembled from a combination of universities and national laboratories both in the United States and from around the world. The collaborators have great breadth of experience in the many areas of expertise needed for a successful outcome. These areas include neutron science, nuclear instrumentation, nuclear magnetic resonance, polarized  $^3\text{He}$  and neutrons, SQUID technology, strong electric and weak magnetic fields of high uniformity, and cryogenics. The collaboration currently consists of 14 institutions and 32 members. The collaboration contains many world experts.

### A. Collaboration

Members of the EDM collaboration, “A New Search for the Neutron Electric Dipole Moment.”

Institution	Collaborators
University of California at Berkeley	D. Budker, A. Sushkov, V. Yashchuk
California Institute of Technology	B. Filippone, T. Ito, R. McKeown
Hahn-Meitner Intitut	R. Golub, K. Korobkina
Harvard University	J. Doyle
University of Illinois	D. Beck, D. Hertzog, P. Kammel, J.-C. Peng, S. Williamson
Institut Laue-Langevin	J. Butterworth
University of Leiden	G. Frossati
Los Alamos National Laboratory	P. D. Barnes, J. Boissevain, M. Cooper, M. Espy, S. Lamoreaux, A. Matlachov, R. Mischke, S. Penttila, J. Torgerson
University of Maryland	E. Beise, H Breuer, P. Roos
Massachusetts Institute of Technology	D. Dutta, H. Gao
National Institute of Standards and Technology	T. Gentile, P. Huffman
University of New Mexico	A. Babkin, R. Duncan
Oak Ridge National Laboratory	V. Cianciolo
Simon-Fraser University	M. Hayden

The spokespersons for the collaboration are Martin Cooper and Steve Lamoreaux.

The list of collaborators is expected to grow beyond those listed above as each institution adds colleagues, postdoctoral researchers, and graduate students. We expect a significant

number of Ph.D. and M.S. theses to come from this project, both from the development of the technique and the results of the search.

Future memberships in the collaboration by additional institutions shall be approved by the existing collaboration at a collaboration meeting. The executive committee (see chapter VII) may grant a temporary membership.

The Los Alamos National Laboratory's Physics Division will enter into formal agreements, memoranda-of-understanding (MOUs), with the universities and laboratories in the EDM collaboration. These MOUs outline the activities that members of each group are carrying out in collaboration with LANL Physics Division, and their responsibilities, funding and scheduling plans. Relevant managers at the collaborating institutions sign the MOUs, stating formally that their institute will support the efforts of their group's duties as outlined in the MOU. Although not legally binding in the strictest sense, these MOUs are the formal method to guide the relationship between LANL Physics Division and collaborators from other institutions.

An MOU between Physics Division and LANSCE Division will be negotiated that outlines the use of the beam. This MOU will cover the LANSCE commitment to the project, the allocation of beam time, funding of facility modifications, the safety envelope, and other issues.

## **B. Institutional Interests**

The areas of interest of the institutions are listed in the table below. The list covers the topics in the work breakdown structure (WBS) in Appendix B. At this time, we are forming teams from several institutions to address the tasks and to tackle the challenges. The details of assignments will be worked out by the time of the conceptual design review (CDR).

## Institutional Interests

Institution	Responsibility
University of California at Berkeley	cos $\theta$ magnet and enclosure, HV Measurement, SQUID pickup loops
California Institute of Technology	cos $\theta$ magnet and enclosure, $^3\text{He}$ transfer and polarization lifetime
Hahn-Meitner Institut	UCN production rates and lifetimes, Measurement cell designs, Particle identification via afterpulses
Harvard University	Measurement cell design
University of Illinois	UCN production rates and lifetimes, Simulation, $^3\text{He}$ transport, Signal Detection
Institut Laue-Langevin	Cryostat and radiation shields, Measurement cell designs, Light guides, Cryogenic feedthroughs
University of Leiden	Dilution refrigerator, Cryostat and radiation shields, Polarized $^3\text{He}$ transfer
Los Alamos National Laboratory	Neutron beam line and shielding, Dilution refrigerator, $^4\text{He}$ purifier prototype, HV capacitor prototype, SQUIDS, Physical plant, Integration and commissioning
University of Maryland	Simulation, $^3\text{He}$ polarization lifetime, Light detection
Massachusetts Institute of Technology	$^3\text{He}$ atomic beam source, Polarized $^3\text{He}$ transfer, Light guides
National Institute of Standards and Technology	Measurement cell designs, Light guides, $^3\text{He}$ transfer and polarization lifetime
University of New Mexico	Superfluid valves
Oak Ridge National Laboratory	Light guides
Simon-Fraser University	$^3\text{He}$ source, spin-flip, transfer and polarization lifetime, Measurement cell design, SQUID response to $^3\text{He}$